
Remediation of a 1940's Waste Dump with Beryllium Concerns

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Environmental Restoration Operation

- Material Disposal Area B (MDA-B) was the Lab's earliest waste disposal area and was used from 1944-1948.
- Site was six acres along the half-mile length of a former waste trench that was up to 35 feet deep.
- Little documentation on the wastes placed into MDA-B.
- Is there beryllium? (Just one of many possible hazards.)
- 87 core samples were taken to help identify materials buried in MDA-B. Beryllium was not indicated.

HOWEVER..... 

Just to be Sure

- Rigorous safety precautions were taken to ensure public and worker safety during the excavation for all hazards.
- Subcontractor developed a Chronic Beryllium Disease Prevention Program (CBDPP).
- “Trigger Events” activate full program:
 - 8-hour TWA air concentrations above 0.03 ug/m^3 ,
 - Soil or waste concentrations above 144 ppm,
 - Discovery of containers that are labeled as containing beryllium,
 - Surface contamination above soil background, or
 - Other information becomes available to site IH that warrants further actions.

What makes the project interesting..... 

A Few Changes Since 1948



To Keep It Under Control..... 

Enclose & Ventilate Excavation Areas



Interior of Typical Enclosure

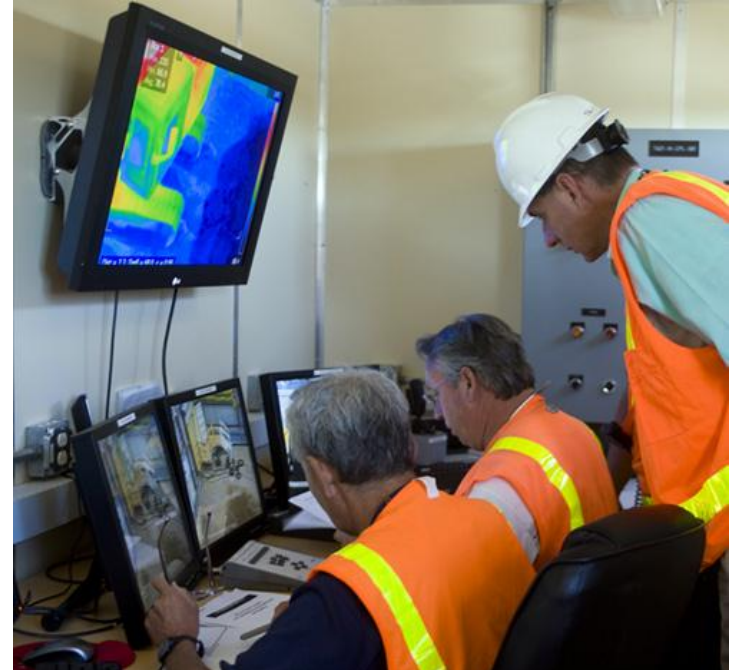


Site Layout



Limit Need for Access..... 

Remote Backhoe and Remote Observation



- Remotely operated equipment was available.
- Multiple remotely operated cameras for safe observation.
- Infrared to identify heat from possible chemical reactions.

Supply-Air with Escape Bottle for Operator



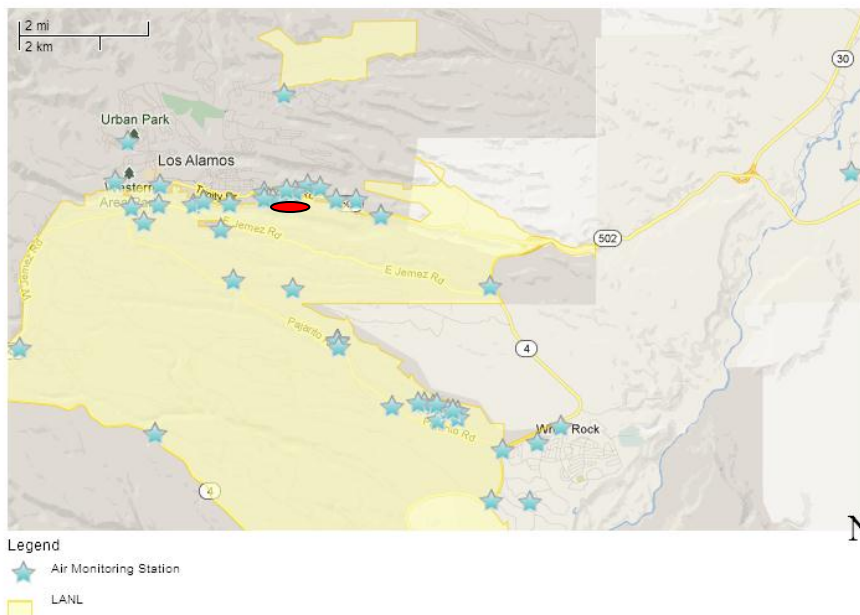
Shielded Excavator Cab



Handling and Packaging Wastes



Community Air Monitoring - AIRNET



- AIRNET is an established environmental air monitoring system with 30 active monitoring stations at the Lab; in the Los Alamos town site; and in the surrounding communities. MDA-B site indicated in red.
- Monitoring data available to the general public via internet and reports.

Typical AIRNET Air Monitoring Station



- Additional stations can be added as needed during major projects, like the MDA-B remediation or during emergency events, such as forest fires.
- 60 monitoring stations were active during the MDA-B project.

First, a Light Weight Metal Disc Raises a Flag



- Corroded, light metal parts found at surface raised beryllium concerns.
- Metals analysis performed on surface wipes indicated very low levels of beryllium consistent with local soil.
- Cu/Al ratio of 4% indicates Duralumin alloy, not beryllium.
- May be from adjacent machine shop & not old wastes.

Then, the Real Thing Shows Up



- Excavator operator reported “Soil looked like it contained glitter”.
- Jars containing fine metal chips unearthed. Analysis confirms beryllium.
- Area sample in enclosure exceeds action level. PBZ samples detectable.
- Regulated beryllium area established.

Enclosure 9 Beryllium Area

- Full CBDPP requirements implemented. Increased level of personal breathing zone, area air, and surface sampling.
- Established controls proved functional. No further action level exceedances. Some airborne detectable, but low.
- Waste containers cleaned and placed in a temporary beryllium contamination area pending sampling results.
- Soil was considered beryllium waste if greater than 144 ppm.
- Beryllium was limited to a small portion of the waste trench.
- Clearance sampling to release enclosure when excavation was completed.

MDA-B Compared to Luckey Site

- MDA-B had a lot of unknowns with a wide range of contaminates and hazards possible. Luckey is better characterized with primarily beryllium and radiological concerns.
- Because of the unknowns and close proximity of the community, enclosures were deemed necessary for MDA-B. Enclosures not practical or needed for the Luckey site.
- At MDA-B beryllium was limited to a small area. At Luckey the contamination area is extensive.
- LANL had an established environmental air monitoring and public communication system in place. Luckey site may need additional sampling and communication during remediation.

Future LANL Site Remediation?

- LANL has several open-air firing points where beryllium was used in the past.
- In use, these sites were occasionally leveled with bulldozers and fresh fill may have been brought in to replenish firing point surface. Beryllium contamination may be trapped in layers near the surface.
- A sampling report from 1955 indicates exposures of 2.0 ug/m^3 for a bulldozer operator and a truck driver working at one firing point. May have been early remediation attempt.
- Currently access is controlled. Possible remediation in the future. Luckey site remediation is learning opportunity.

Questions



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